DOCUMENT RESUME

ED 380 281 SE 055 899

AUTHOR Hubbard, James; And Others
TITLE Dynamics of Alliances.
INSTITUTION Mid-Continent Regional Educational Lab., Aurora, CO.
SPONS AGENCY Eisenhower Program for Mathematics and Science Education (ED), Washington, DC.
PUB DATE [95]
NOTE 25p.
AVAILABLE FROM McREL Resource Center, 2550 S. Parker Road, Suite 500, Aurora, CO 80014 (quantity discounts available).
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Community Involvement; *Coordination; *Educational Environment; Educational Improvement; Elementary Secondary Education; *Group Dynamics; *Group Structure; *Partnerships in Education; *School Community Relationship; Science Education

ABSTRACT

To encourage the involvement of the community in mathematics, science, and technology education, some states and localities have formed alliances. This book outlines four key components of alliance building: process, environment, structure, and outcomes; and describes how changes in one component affect the others. It is designed to serve as a framework for creating new alliances and for reflecting on the workings of existing alliances. Section I, "Perspectives: Setting the Stage," examines the need for educational alliances in a society that is changing, reviews rationales for alliance formation, and considers the benefits of an alliance. Section II, "Dynamics of Alliances," considers the environment, structure, process, and outcomes of an alliance and covers gauging the condition of an alliance's environment, statements that reflect barriers to a healthy environment, where to recruit members for an alliance, how vision is connected to structure, and qualities of alliance leaders. Section III, "Basic Principles of an Alliance," discusses organizational needs, and various processes that can be considered in alliance formation or ongoing review. Section IV, "Taking Action," refers the reader to background information on the steps of alliance building. Contains a 26-item bibliography. (LZ)

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# Dynamics of Alliances

James Hubbard
Manert Kennedy
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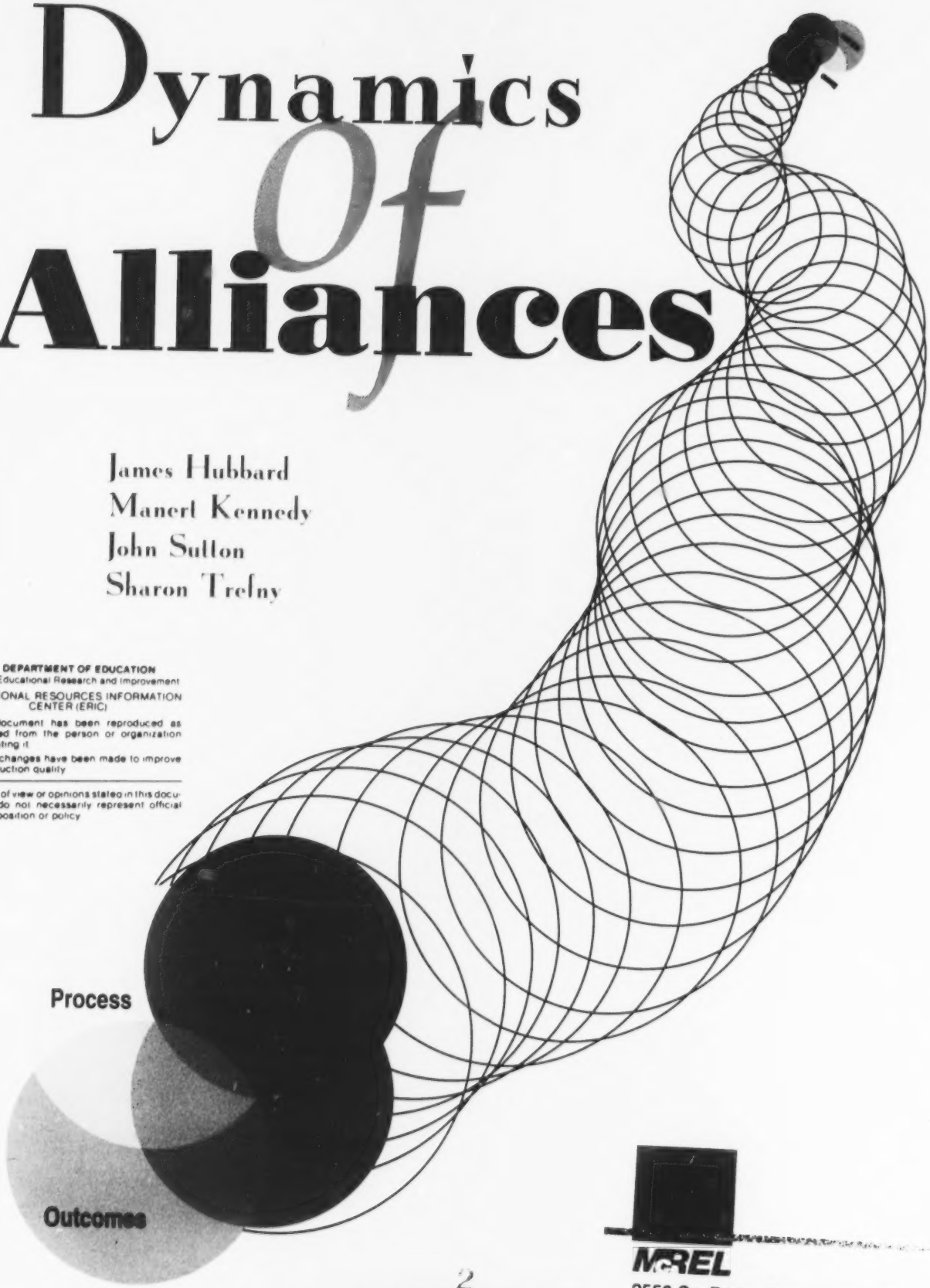


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# DYNAMICS OF ALLIANCES

**by**

James Hubbard
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*A vision without a task is but a dream;*
*a task without a vision is drudgery;*
*a vision and a task are the hope of the world.*
(from a church in Sussex, England, c. 1730)

Edited by Ceri Dean

# ABOUT THE AUTHORS:

**James (Jim) Hubbard** • Jim, a former IBM Executive and current Director of the Colorado Alliance for Science and Executive Director of the Institute for Alliances understands the dynamics of alliance building. He has over 35 years of experience in building alliances in both industry and educational arenas. Hubbard has consulted on alliance building throughout the United States, Europe, and Asia.

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*This publication is based on work sponsored wholly or in part by grant CFDA Number 84.168R from the National Eisenhower Mathematics and Science Program, U.S. Department of Education. Its contents do not necessarily reflect the views or policies of the Department, or any other agency of the U.S. Government.*

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# FROM THE AUTHORS:

It is critical in this time of educational reform that a broad-based level of community involvement emerge to meet the challenges facing education. Our intent in writing *Dynamics of Alliances* was twofold: to provide a rationale for developing broad-based alliances to organize and sustain community involvement and to describe the factors that influence the likelihood for a successful alliance.

Readers will find that *Dynamics of Alliances* is not prescriptive. It does not present a "cookbook" approach to alliance building, nor does it provide a blueprint for success. Rather, it outlines four key components—process, environment, structure, and outcomes—and describes how changes in one component affect the others. It is designed to serve as a framework for creating new alliances and for reflecting on the workings of existing alliances.

We intend for this document to be used as a road map, recognizing that different groups have different vehicles, different starting points, and different destinations. That is the spiral nature of the "dynamics of alliances." As depicted by the cover design, the dynamics of alliances can be represented by an interconnected structure that is either emerging or moving in a new direction. Movement to a position of higher prominence and visibility depends on effective interactions of the four components.

We hope that this document will help you understand better the dynamic nature of effective alliances and the importance of broad-based participation. We very much enjoyed collaborating on the development of *Dynamics of Alliances* and hope that you enjoy the result.

**James Hubbard**
**Manert Kennedy**
**John Sutton**
**Sharon Trefny**

# I. PERSPECTIVES: SETTING THE STAGE

Change. Change. Change. Change or go out of business. Change or lose your customers and clients. Change or face extinction. Systemic change, re-engineering, quality management, strategic planning, renewal on a grand scale, and, finally, a paradigm shift in what we are doing and how we are doing it — these are our times.

Education must be transformed to meet the needs of this changing society. Although it is not easy to predict which elements of the present system will survive, their form, or their purpose, it is likely that the changes in the system will be guided by new views of learners and learning. New ways of doing business in education will emerge, as will new institutions with new ways of using technology. There will be new ways of judging teachers, classrooms, and schools in relation to learners and a learning society. Roles will change and old lines of communication will be redefined. The old ways of doing education will be questioned at every level to ensure their fit with the needs of a society in which learning must be dynamic and lifelong.

At the national level, with regard to science, mathematics and technology education, there is a broad and determined response to the forces for change: "While problems in American science education are disturbing and serious, there is now an unprecedented commitment to make things better. The President of the United States, executive officers of major corporations, university chancellors and presidents, state governors, and local community leaders have all made articulate and strong statements about the need to improve education in mathematics, science, and technology. Statements by such an impressive array of the country's recognized leaders underscore the point that the improvement of education is now, for the first time, seen as everyone's responsibility; it is now believed that schools are unlikely to get better unless many of the nation's key institutions begin shifting some of their resources toward collaborative efforts to improve the quality of education for succeeding generations" ( Atkin, 1991).

At the local level, leveraging and reallocation of resources will demand that the community be actively involved in the transformation of education. Such involvement must not be limited to behind-the-scenes or support roles, but rather must be expanded to a shared role for the community in creating the future of science, technology and mathematics education.

To encourage the involvement of the community in mathematics, science and technology education, some states and localities have formed alliances. Alliances are groups of individuals or organizations working together under a formal structure for a common purpose. Although the alliance movement has been growing exponentially over the past decade, many alliances remain unorganized with poor lines of communication among groups. As a result, alliances are often merely collections of programs and products that amount to no more than cosmetic touches on the educational edifice.

Alliances that are structured only to bring more resources to maintain or to enhance the present system are not a part of the systemic change needed to transform education. Such alliances may, in fact, present an impediment to change. To function properly in a time of extraordinary change, alliances must be dynamic in nature. To ensure a dynamic alliance, alliance builders must continually ask questions about what they are doing, how they are doing it, and why they are doing it.

## RATIONALES

The many science and mathematics education reform efforts currently under way in the United States bring to mind the response to the Sputnik crisis. The Sputnik-crisis response to mathematics and science education was driven by scientists and educators during a perceived moment of national threat. This crisis led to the development of the "alphabet curricula" (e.g., School Mathematics Study Group [SMSG], Biological Sciences Curriculum Study [BSCS], Earth Science Curriculum Project [ESCP]) sponsored by the National Science Foundation. Although many of these programs had widespread impact and opened new arenas in science education at the time of their development, many were not fully implemented and certainly were not sustained very well over time. Thus, the nation's science and mathematics education returned to a "business-as-usual" status.

The significant difference between the Sputnik era reform movement and the current reform movement is that the current effort is moving at a slower and more thoughtful pace, with the involvement of a much broader base of individuals and institutions. People from business and industry, government agencies, engineering and scientific communities, higher education and schools are coming together in impressive numbers and in innovative ways to look at, and act on, the issues of reform. More importantly, these people are searching for ways to make systemic changes in the way we educate to assure that we can sustain the reform and keep education in a dynamic state that establishes a community of learners and sustains life-long learning.

Alliances, partnerships, and collaborations can play significant roles in this broader approach to education reform. As illustrated in Table 1, alliances foster communication, help identify educational needs, and bring other benefits to their members and to the community. Most importantly, community-based alliances, with their ties to regional, state, national and international alliances, provide a mechanism for developing the consensus and wide-based support and action needed to support change.

A stronger dialogue about education is one prerequisite for stronger performance in the schools. Alliances provide a forum for such dialogue. In addition, alliances can support the structural changes that will be needed to implement and sustain reform. Thus, through alliances, we can avoid the implementation mistakes of the science and mathematics education reform efforts of the 1950s and 60s.

## NEEDS

The poor performance of U.S. students in science, mathematics and technology on international comparative tests and on national assessments has been well-documented (National Research Council, 1989). Further, according to industry, when students enter the workforce, they need extensive remedial education, which costs industry billions of dollars each year.

There are many causes for poor levels of performance in mathematics, science and technology. In some cases, schools are overcrowded, curriculum is outdated, or parents are not supportive of course work in these subjects. In other cases, the school does not provide sufficient equipment or time for "hands on" work and active involvement in science, mathematics and technology. In addition, counseling practices and tradition discourage many students, especially females and minorities, from taking these courses.

In some cases, poor student achievement can be traced to the teacher's inadequate preparation to teach science, mathematics or technology. In a survey involving 30 states, the Council of Chief State School Officers (Blank & Dalkilic, 1990) found, on average, nine percent of high school mathematics teachers were not certified in mathematics. They also found that eight percent of biology teachers, eight percent of chemistry teachers and 12 percent of physics teachers were not certified to teach their courses. Data for some individual states, however, indicate that from 20 to 30 percent of high school science and mathematics teachers teach outside their area of certification. The study did not address the preparation of elementary or middle school teachers, two groups who traditionally have limited preparation in mathematics and science.

With the needs clearly defined and the rationales in place to support the development of alliances, it is clear that addressing the needs of education today can not be an issue only for professional educators: It is an issue to be faced by the entire community. If a community accepts the responsibility and makes a commitment to improving the community's learning environment, the basis for an alliance is in place. A successful alliance is a dynamic, synergistic effort built upon the "rainbow of expertise" that exists in the community itself.

*TABLE 1*

### Benefits of an Alliance

- counters isolation by opening a dialogue between educators and other professionals
- creates links between communities and the education system
- informs the general public about education problems, needs and progress
- connects educators with model programs already proven to be successful
- identifies competencies that will be needed by future work forces
- provides a broader information base from which teachers can help students make decisions about educational goals and future employment opportunities
- forces the development of creative programs to improve science, mathematics and technology education to help meet the special needs of disparate education systems
- provides a mechanism for talented people from various sectors of society to share their expertise for the welfare of America's youth
- involves parents and families in supporting and participating in each child's education
- empowers all its partners and promotes collaboration

# II. DYNAMICS OF ALLIANCES

The world is in the midst of fundamental change. The linear structures that once organized and regulated systems are inappropriate for the fundamental changes of today's society. Institutions and businesses are merging, reorganizing, down-sizing, right-sizing and flattening structures. They are restructuring, re-engineering, redesigning systems and implementing Total Quality Management. They are moving from the mechanistic applications of the classical science era to the evolving processes of quantum theories.

Leadership, roles and responsibilities are also changing. Autocratic leadership is being transformed so that it is more accessible, collaborative and empowering of others. Rigid protocols and defensive postures are turning to shared decision making and trust. Roles and responsibilities are changing from definitions of specialists to definitions of the whole person. Predictive skills are less desirable than improvisation skills.

To be successful in today's society, the *environment*, *structure*, *process* and *outcomes* of an alliance, its dynamics, must reflect such changes. The dynamics of an alliance facilitate the formation of goals and continued success in achieving goals. They are inter-connected and inter-dependent, with a change in one dynamic causing changes in the others.

## ENVIRONMENT

The environment is, by definition, "the complex of social and cultural conditions affecting the nature of an individual or community." The alliance environment is acted upon by the views and actions of its membership. To discover how the membership can create and sustain a healthy alliance environment, we will examine the nature of environment within the context of traditional and current thought.

Applying the traditional linear, cause-effect view of science to social organizations encouraged the development of fixed guidelines that led to fixed visions, behaviors, leadership, community involvement, structure, process and outcomes. By following a "recipe," we structured the environment into zones of safety, thus establishing the illusion of control over our environment. Emerging quantum and chaos theories, however, indicate that nature is not entirely organized by the traditional laws of science. Because our social dynamics are evolving in parallel with these emerging theories, the manner in which we interact with our environment must change.

The film, "Mindwalk" (Capra, 1991); the book, *The Arrow of Time*, (Coveney & Highfield, 1991); and the writings of Senge (1990a, b) and others (e.g., Wheatley, 1993), confirm what we have learned through experience about alliance building. There are inevitable "perturbations" and uncertainties that disrupt our neat structures and put the alliance environment into "chaos." Many alliances fail when such perturbations occur because they simply don't know how to control or fix the perturbed environment. Typically, new rules are imposed that seem to accommodate the perturbations. Rather than helping, these tighter structures and more rigid processes often result in the deterioration of the environment and the collapse of the alliance. The recipe for building

and sustaining the alliance becomes the recipe for demise.

In the spirit of current thinking, the forces that produce change occur in several stages: diverse thought seeking consensus (chaos seeking order), dialogue or action producing consensus (equilibrium), and new perturbations leading to further change (new order). The alliance environment that supports these stages of change is healthy. When change occurs in this manner, the environment can be seen as a learning community that is stimulated by diversity. In this context, diversity is necessary to sustain continuous learning, which, in turn, promotes the health and growth of the alliance environment. Thus, recognition of, and respect for, diversity are key to the health of an alliance.

Looking at the dynamics of alliances in this way, one begins to see that a healthy environment supports new thought or vision, new leadership and evolving participation of its membership. In a healthy environment, all members are connected to the process of creating vision for the alliance. All members own the vision and are responsible for, and accountable to, it. A healthy alliance environment also provides the members with opportunities to learn from the perspectives of others. The combined perspectives form a greater knowledge base both within the individual and within the alliance as a whole. Development of a broader knowledge base nourishes the emergence of new thought or new leadership. Members are both satisfied and stimulated under these conditions.

Within a healthy environment, one recognizes that each event may require new structure and new process. The idea that a particular structure and process that work effectively for one event would work for other events is deadly. In a healthy environment, one lets go of old events, old processes and old structures so that the new can be introduced without encumbrances.

There are no sure recipes for success, but understanding the dynamics of alliances — their characteristics, interconnectedness and interaction with the environment — will help to set up healthy, supportive conditions that will minimize the occurrence of failure. To understand the condition of your own alliance environment, ask the leading questions shown in Table 2.

*TABLE 2*

## Gauging the Condition of an Alliance's Environment

- Are diverse opinions, perspectives and groups represented in the alliance?
- Is free and frequent exchange of ideas among a diverse membership encouraged?
- Is there equal and frequent opportunity for learning? For new visions?
- Is there equal and frequent opportunity for new leadership to emerge? For new ownership?
- Are the goals, structure, process, and composition of membership frequently examined and changed?
- Is more time spent trying to fund operations and old efforts than examining issues and trying to discover new solutions?
- Are the personal agendas of the leadership getting in the way of learning and change?
- Is the membership attentive to questions such as these or is it afraid of losing control or of undergoing change itself?

*TABLE 3*

## Statements that Reflect Barriers to a Healthy Environment

- Create a secure structure and process first.
- If there's a problem, make a rule.
- If people don't understand, just tell them what to do.
- She's been in charge for years. Put her in charge.
- It's my job to make the decisions.

- Better not experiment, it might be risky, and we could fail.
- Accept limitations.
- Don't examine your own assumptions.
- Rely on proven recipes.
- Criticize new ideas if you've already got a good one.
- Get the "right" ideas. Discourage differing views that aren't good.

- Devise a plan before creating a healthy environment.
- More time should be focused on action and results than on environment and process.
- Develop an environment where people are afraid to make mistakes.
- Examine the parts rather than the whole system.

When an alliance begins to flounder, all too frequently efforts are focused on fixing symptoms rather than on examining the health of the environment. For example, we hold up the successes of the past and wonder how to repeat them. We call upon old leadership to find solutions. Instead, these difficulties should be recognized as a natural part of the dynamics of alliances. These natural perturbations bring about change. They are a signal to examine the health of the environment. We can do so by asking if the current environment supports the new direction brought about by change or if it is necessary to make adjustments to the environment to better accommodate the diversity of new members, new visions or new leadership.

Table 3 presents some statements that reflect barriers to a healthy environment. The statements can serve as catalysts for discussion and reflection as you further examine the condition of your environment.

## PROCESS

For the purpose of this publication, we define process as "a series of actions, changes, or functions in a given system that achieve an end or result." Our systems are changing and consequently, so are our expectations about their performance. Educational systems also must change to meet our new expectations. To understand how alliances can positively influence change in the educational system, we can look to the re-engineering process.

Re-engineering means starting over from scratch to understand the requirements of the system as a whole. It means being open to multiple ways of thinking and new interactions outside of the confines of past linear structures. Re-engineering is not the rethinking of how parts can be improved. Rather, re-engineering is understanding the processes and relationships of the parts within the system.

In education, re-engineering is the collaborative rethinking and system redesign of environment, relationships and processes that prepare life-long learners for their places in society. When the goal is life-long learning, the entire community are constituents of education and must be involved in the re-engineering process. Thus, an alliance's membership must be broad-based to reflect the multiple views of the community. By understanding their connections to one another and to the education system, a diverse membership can serve as a catalyst for the re-engineering process.

As suggested in Table 4, broad-based membership can be achieved by recruiting from diverse sources in the community. In addition to the sources given in Table 4, the yellow pages of the local phone book are also a good reference for locating members of the community who have an interest in science, mathematics and technology education.

Initially, a person or group of people will take a leadership role in bringing together the entire community. In order to spark interest in the alliance, the initial leaders need to have a clear intent or vision of what the alliance can accomplish and need the passion to convey the potential of the alliance to others. The leadership also must understand the need to share recognition and responsibility. Before decisions are made, a broad-based representation of the community must share in creating a vision for the alliance. A partnership created by a few people who define their own mission cannot expect others to follow along. Such an effort will have limited life and impact.

Today, a successful alliance must evolve collaboratively with many people sharing the design and implementation of the mission and goals.

As stated earlier, re-engineering involves an examination of the relationships within a system. One of these relationships is leadership. In a healthy alliance, leadership is not static nor is it restricted to only a few. New leadership emerges as new members are recruited and as other members' commitments to jobs or families change. If an alliance is to maintain its vitality, it must encourage and recognize the emergence of

*TABLE 4*

## Where to Recruit Members for an Alliance*

**Business and Industry**
- Chamber of Commerce
- marketing organizations
- veterinarians
- auto dealers
- farm implement dealers
- pharmacies
- clinics
- utilities
- agri-business
- research labs

**State and Federal Government Agencies**
- Soil Conservation Service
- Bureau of Land Management
- Department of Energy
- Department of Health & Human Services
- Department of Transportation
- NASA
- NOAA
- FAA
- USDA
- NIH

**Education**
- K-12 teachers and administrators
- governor's education advisor
- state department of education consultants
- state legislature members of education committees
- state mathematics and science teacher organizations
- representatives from two and four year colleges and universities, technical and trade schools

**Community Organizations**
- 4-H
- Kiwanis Club
- Optomist Club
- PTA
- Daughters of the American Revolution
- hobby clubs
- YMCA and YWCA
- Rotary Club
- Lions Club
- Boy and Girl Scouts
- church groups
- AARP

*This is not an exhaustive list

new leadership. Further, although our society has traditionally not emphasized the personal satisfaction that one can obtain from sharing power, recognition, and rewards as a group, members must learn the benefits of sharing leadership if they are to maintain a healthy alliance.

As new members are recruited for the alliance, they will gravitate to areas in which they have interest and skill. In this way, the workload of the alliance is naturally distributed and the team is able to capitalize on its members' expertise. People's ability to maintain their level of involvement in the alliance, however, continually changes. Good people may be lost as a result of such changes, but good people will also be found if an alliance actively attends to its membership.

The current education system has been viewed as being solely responsible for education, in part because all available community resources have not been considered part of the system. The times, however, indicate that "business as usual" is no longer justified. It is time for re-engineering — rethinking the requirements of the system. Through an alliance, educators can be given the opportunity to learn how the community must be engaged in the re-engineering process. When the community is involved in the process, the blaming syndrome converts to mutual responsibility. An alliance brings the community together to create an environment that enhances learning for the whole community. Together they can identify and deal with issues. Their combined information will assure informed decision-making about the direction of educational change.

## STRUCTURE

Structure is by definition "the manner in which something is constructed or the supporting framework or essential parts of a thing." To the mathematician structure is seen in an equation; to the scientist, a formula; to the architect, a set of specifications; ...to an alliance, a guide to the form that allows the alliance to accomplish its mission. For an alliance, structure needs to be an open system that is influenced and formed by processes and outcomes and that is interactive with the environment.

Flexible structures, made from the shared vision of the community, assure the health of the alliance. As alliance partners become immersed in the creation of the alliance, the structure takes on a new shape that reflects the "rainbow of expertise" of its members. The structure evolves as the environment, process and outcomes change. Thus, the success of an alliance depends on its flexibility to operate in an upward spiral rather than a linear or cyclical manner.

In the past, alliances have been framed in a linear manner: identify partners, adopt a vision, set project goals, develop an action plan, evaluate success. Many alliances met their demise as a result of following this linear path. That is to say, in a linear process, once the resources have been rallied to address a specific need, organizationally the mission is complete. As in most organizational

*TABLE 5*

## How Vision Is Connected to Structure

| Vision | Structure of the Alliance |
|---|---|
| The alliance seeks to create meaningful, coherent knowledge regarding organizational change. | Members become actively involved at the policy-making level. |
| The alliance is a resource for the community in terms of knowledge about reform efforts, emerging technology, workplace requirements. | There are collaborative relationships with professional organizations, long-term institutional commitment, advocacy for policy and laws, and broad-based membership. |
| The alliance serves as a model for collaborative efforts. | All members have a voice. There is shared authority and decision-making, and broad-based, multi-agency planning. |
| The alliance promotes and supports life-long learning. | There is integration of community-based resources and the shared creation of a "restructured learning system." |

cases, once the mission is complete, the entire operation (including relationships with allies) is shut down.

The current K-12 education system also demonstrates the application of linear processes. For example, once a student passes a class, the teacher's responsibility ceases. Once students graduate, they are no longer the responsibility of the school system. Thus, there is no institutional commitment to life-long learning in the current system. As the focus shifts to life-long learning, the education system must commit to establishing and maintaining a learning community.

An alliance can facilitate the emergence of a learning community if it has a vision that is meaningful to all its constituents. The vision should focus on shared outcomes. It should express a common value and inspire and compel the members to take action. Table 5 gives some examples of how vision is connected to structure.

*TABLE 6*

## Qualities of Alliance Leaders

- devote the time necessary to the alliance
- network with organizations and individuals
- facilitate communication and collaborative decisions
- understand the vision and communicate it to others
- foster and promote team participation

Leadership plays an important role in the alliance structure. (See Table 6 for a summary of necessary qualities for alliance leaders.) Typically, an initiating group provides the motivation to bring together various players to form or strengthen the alliance. In a healthy environment where all partners are involved in the alliance-building process, the initial leadership usually stays in place only long enough for new leadership to emerge from the membership. In the upward spiral of alliance development, as new visions for the alliance emerge, different leadership emerges as well. The structure of a well-functioning alliance not only allows for this type of leadership emergence, the structure promotes it.

The membership of effective alliances consists of diverse individuals and groups who are directly affected by issues and others in the community who are indirectly affected. In order to secure broad-based representation and support from the community, an alliance needs to include appropriate power structures, government agencies, business and industry, the K-16 education community, professional organizations, and community organizations. In general, community participation in the alliance can be realized through three primary roles: activists, doers and communicators. *Activists* often serve in alliance leadership positions. They motivate others, secure resources, and "stir the waters" that help the alliance grow. *Doers* take on tasks and make up committees. *Communicators* convey the message of the alliance to various audiences and use existing and newly identified networks. Recognizing that each role is necessary but not sufficient to assure the health of the alliance, healthy alliances value all the contributions of every member. The structure of the alliance must enable these contributions and encourage members to take on any of these roles and to change roles as needed or desired.

## OUTCOMES

When we talk about alliances, we view an outcome as the end result of an action. With that in mind, clearly, one outcome of a well functioning alliance is the development of skilled leaders. Just as "everyone a learner, everyone an educator" has application to learning communities, "everyone a leader, everyone a follower" has application to alliances. Because new challenges and possibilities are always available in a healthy alliance environment, the emergence of new leaders is encouraged.

The type of leader developed by a healthy alliance is very different from the traditional leader in an

autocratic system. The directive approach and top down management do not work in alliances. In successful alliances, astute leaders bring people together to solve problems and set goals: They do not run the show. Such leaders use collaborative energy to serve the needs of the community rather than the demands of an individual.

In a healthy alliance environment, leaders are also learners who develop skills that enable the membership to work toward shared creation and ownership of the vision. Effective leaders are marketers of information who work to strengthen others' networks in science, mathematics and technology education. They help identify educational issues, needs, and resources, and act as facilitators, not as directors. In a healthy environment, leaders also teach leadership and collaborative skills to others. In this way, all members of an alliance can become a leader.

Another outcome of an alliance is effective use of resources. Strategic leveraging of resources results when an alliance is well-structured and all members understand mutual benefits and interact in ways that create synergy.

Effective use of resources and development of skilled leaders are important outcomes, but the single most important outcome of an alliance is the improvement of mathematics, science and technology education. Local, regional, and state-wide collaborations; fellowships in industry for teachers; visiting scientists in schools — all offer valuable opportunities for making connections to bring about this outcome. To that end, the ultimate connection is to bring the diversity within the community together to explore issues and educational needs and to create shared solutions. In this way, the community is integral to the educational system.

Education is related to, and exists within, the context of a much larger, complex society. For example, the value attributed to education by the family and the community is an important variable in educational achievement. In a society that values a learning community, education is everyone's business. Teachers, administrators, and school boards support an educational *process*, but they can not support the whole educational *system*. Every member of society is responsible for the direction of the education system. By participating in alliances, all stakeholders can share this responsibility.

# III. Basic Principles of an Alliance

By definition, an alliance is "a coalition of interested institutions, groups and individuals working together to promote a particular purpose," in our case, to promote the improvement and reform of science, mathematics, and technology education. An alliance can vary in geographic scope from local (formed around a city or school system), to regional (organized to include a number of schools, school districts, communities, colleges and universities), to statewide or multi-state.

Regardless of geographic scope, all alliances share some basic principles. These principles include the need to be organized in a flexible way in order to allow maximum collaboration among members and maximum input to decision making. Another basic principle is that the membership of an alliance should be broadly representative of the community since the alliance aims to bring together diverse individuals and groups who know their responsibility in improving science, mathematics and technology education. The members or partners share equally in their commitment to the work of the alliance; there is no one dominant or controlling member or sector. An additional principle for all alliances is that responsibilities emerge, creating flexible structures that support them. Policies are designed to support function and goals. Further, decision-making includes all members, and communications are open and honest. All partners share the alliance's agenda. All partners are accountable for the environment, process, structure and outcomes of the alliance.

Based on our experiences with alliance building, we offer in Table 7 some other basic principles as guideposts and as a starting or reviewing point for your alliance-building efforts.

In addition to the basic principles that guide an alliance, there are also various processes that can be considered in alliance formation or ongoing review. During alliance formation these processes demand collaborative attention.

The goal of creating or sustaining a dynamic alliance is to bring together multiple stakeholders who will become significant participants in the work of making a dream a reality. The first meeting of these many stakeholders is critical to their future involvement. For this reason, the first meeting must be very carefully planned.

## PLANNING THE FIRST MEETING

The planning process not only determines the expected outcomes (who, when, why, where, and what) of the first meeting, it also sets the stage for the environment and structure and creates the tone for future processes. It is important to call upon representatives from the "whole system," people who cut across lines of hierarchy, status, culture, gender, race, and class, in order to develop common understandings about the environment, process, and structure of the dynamic alliance you wish to co-create. Through discussion during the planning process, find the common theme or focal issue to engage the interest of a broad-based group

*TABLE 7*

## Guideposts for Alliance-Building Efforts

- *People* are the key to success. Interested individuals are necessary to internally muster an organization's support for an alliance.
- Before the alliance's role can be defined and common programmatic goals designed, partners must identify and understand mutual needs and benefits and share a vision. It is important to maintain partner equality to ensure stability. Two goals in alliance building are to increase the level of *shared ownership* and to *create synergy.*
- Alliance builders should meet with broad-based groups.
- Effective *communication* among all individuals and organizations is essential to an ongoing productive alliance.
- Successful alliances have *open-minded partners* who are able to listen and learn from each other before taking action.
- An alliance must have a clear intent and passion to win individuals' time and commitment.
- *Building collaborative thinking* is a major activity of an alliance involving schools, businesses, industry, higher education, professional organizations, research laboratories, governmental agencies, community groups, and individuals.
- Alliances work from a *whole-system-reform* perspective rather than a *component-part-"fix"* perspective to solving education problems.
- Commitment, shared vision, clarity of mission, common goals linked with healthy environment, collaborative processes and flexible structures are all crucial components.
- Although a host organization may house an alliance, recognize that there are many interdependencies.
- *In-kind sharing of resources* such as office space, printing, and staff is as essential to an alliance as cash contributions. Selling products such as activity-based science kits is a fiscally sound way to support an ongoing program.
- *Funding* and *contributions* must be tax deductible. This suggests a 501(c)3 nonprofit structure for alliances.
- *Funders* should be active participants in the alliance;
- An alliance must *assess* and *evaluate* its objectives and programs, making periodic reports on outcomes. Both quantitative and qualitative data are important as evidence of project success.
- *Recognition* of accomplishments is important. Give credit and visibility to people and organizations.

of stakeholders. The goal of the planning meeting is not to create a vision or discover solutions to problems related to your theme. The goal is to create an agenda that is flexible and meets the needs of the group.

As part of this planning session, discuss what it would look like to hold a first meeting that employs the learning process, discovers competencies, empowers new leadership, creates a common core of global understanding, and clarifies relationships between the theme and the stakeholders and the interdependence that exists among the stakeholders themselves. *Set the environment that will enable shared creation of a common vision.*

## THE FIRST MEETING PROCESS - EQUILIBRIUM

If the planning process was carefully followed, the first meeting, no doubt, will include participants who represent maximum diversity, a microcosm of the world view of your theme. Following the recommendations for a successful "search conference" given in *Discovering Common Ground* (Weisbord, 1992), the first meeting should be an opportunity for participants to thoroughly examine issues through a whole-systems view, beginning with the historic and relatively non-controversial events. Secondly, participants examine current events and issues from the whole-system perspective and in relationship to each group. These activities give all participants a common field, shared historical perspectives and a global understanding about the present. The third activity is to co-create an ideal image(s) of what things should be like from constituent group views within the context of the global picture. This is not the time to discuss strategies, processes, structures, fixes, agendas, or personal programs. Groups are encouraged not to edit ideas, even if some may appear unrealistic or undesirable.

## THE FIRST MEETING PROCESS - PERTURBATION

Discuss the future as envisioned by all constituents. Find the commonalties among the groups that will help to articulate a long term vision that represents a global picture. Don't go further in the alliance-building process until consensus is reached on the vision. Everything that an alliance is and does depends upon and is built around a shared vision. The vision should evoke an emotional response (excitement, enthusiasm, etc.) that engenders enough energy to motivate participants to continue building toward an alliance.

Sort through the ideal images of the future created by the groups. Identify key ideas. Clarify, prioritize, and sort them by categories. These will become the alliance objectives or goals.

## THE COLLABORATIVE STRATEGIC PLANNING PROCESS

Unless you are completely satisfied that the participants constitute the total membership desired for building the alliance, the first meeting should end. It would be most unusual for all potential members to be present at a single, first meeting.

The collaborative planning process is iterative and therefore takes time and requires a great deal of information sharing. Implied in this process is whole-systems participation and a significant degree of consensus (typically not unanimous). The shared vision or vision and objectives that were created in the first meeting should be distributed to your entire potential membership. Individuals who did not attend the first meeting should have sufficient opportunity to respond to the vision and objectives and to discuss their own perspectives about them with the core group. This is the iterative part of the collaborative planning process that may take place more than once. Engaging in the iterative effort now will pay big dividends later because it indicates that the environment values its members. It also assures whole-systems learning and significant ownership.

Assuming we have co-created an exciting vision and found agreement on some key objectives, we are ready for co-creating strategies. Partners (co-creators) examine the present situation defined at the first meeting and analyze its elements against the ideals of the future, the objectives, to determine what conditions must occur to bridge the present to the future. These conditions help to define the strategies that must be undertaken to make that bridge. All views must be shared and reflected upon in the collaborative or co-creation process. Complete information about the strategies must be shared so that affects and intentions are well understood. An iterative process involving all partners should be employed while establishing strategies. Typically, the strategies defined to bridge the gap between present and future are too vague to specify who does what and when. In these cases, the partners examine the present and look for ways to bridge the gap to the strategies. This iterative process continues until there is enough specificity to detail who performs which function when.

The collaborative planning process gives opportunity for leadership to emerge, for doers to volunteer, for requirements to determine structure(s). At this point, the dynamic alliance has been built and only the logistics of formalizing an organization remain. The dynamic alliance is the substance born of the environment and process. Structures do not create substance, only people interacting with other people can do that. Outcomes are not a product of structures but a realization of people planning and working together.

## THE REFLECTIVE PROCESS

Very often, alliances or partnerships that have existed for some time find themselves rethinking their mission or goals, accomplishments and failures. In a dynamic process, reflection is a sign of a healthy organization. The reflective process typically encompasses an historical review of structure, environment, membership, leadership, goals, objectives and outcomes. Any one of these elements, if altered, could result in the emergence of a different alliance or partnership. In the reflective process, decisions that may strengthen or dilute the alliance must be made collectively. The vast number of elemental changes that could result will provide for both interesting dialogue and action.

# IV. TAKING ACTION

Other components of an alliance (philosophy, mission, goals, objectives and action plans) develop after the group has reached consensus on the need for an alliance and has made a commitment to build an alliance. The structure of the alliance must be flexible in order to allow for the redefinition of components as the community and educational climate change. Alliances must be dynamic to remain viable.

During the planning of this resource, there was much discussion and general agreement regarding the need to include specific steps for building an alliance. As the development process continued, it became evident that taking action was something we couldn't do. Taking action requires you, the reader, to decide what, if any, action you would like to take.

Rather than outline for you the specific steps in building an alliance or reviewing the progress you have already made, we will refer you to other excellent publications on alliances and alliance-building that would better serve that purpose. *Improving Science Education Through Local Alliances* (Atkin, 1989) provides excellent background information on dealing with various groups and entities that enhance the viability of an alliance. *A Guide for Building an Alliance for Science, Mathematics and Technology Education* (Triangle Coalition, 1991) gives a nice outline of steps to carry out the building of an alliance. Additionally, they cite many examples of various successful alliances, and characteristics that have made these alliances successful. *How to Build Coalitions* (Iowa State University Extension Service, 1992) provides detailed descriptions of what works in the various steps of alliance building. It also points out barriers to be aware of to ease the disruptions in the process. *Collaboration: Teamwork to Get Things Done* (Education Commission of the States, 1987) highlights examples of effective collaborative efforts that have helped to sustain the school reform movement. Finally, *Science Education Partnerships* (Sussman, 1993) provides many vignettes of successful partnerships that are underway across the country.

In closing, there are several points we wish to emphasize. First, and foremost, is the belief that alliances are fundamental to the reform process. Second, to sustain any reform effort, it is necessary to gather momentum from a broad-based representation of the community. Third, attention to the influencing factors of environment, process, structure, and outcomes is necessary to ensure a healthy alliance. And last, the decision to take action, of any kind, is the right decision.

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